2018
GRADUATE RESEARCH SALON

Arts, Humanities, and Social Sciences
Business and Economics
Communication
Education
Film and Media Arts
Law
Pharmacy
Science and Technology

Wednesday, May 2, 2018
6:00pm - 8:30pm
Beckman 404 George Bush Conference Center

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Schedule of Events

6:00 - 8:30pm Student Poster Session

6:00 pm	Registration & Refreshments
6:20 pm	Welcome Remarks Dr. Richard Redding, Vice Provost for Graduate Education
6:30 pm	Keynote Speaker: Jack Horner, Presidential Fellow

7:00 - 8:15 pm 3-Minute Thesis Competition

7:00 pm	Dr. Tom Piechota, VP for Research
8:00 pm	3MT Winners announced

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*indicate participation in both poster session and 3MT competition

Poster Abstracts

1. **Relationships Between Lower Limb Asymmetries in Strength, Power and Cutting Ability in Division I Female Athletes**

Presenter: Morgan C. Batcheller
Co-Authors: Brandee Barbee, ATC; Melissa M. Montgomery PhD, ATC
Advisor: Melissa M Montgomery PhD, ATC
Program: Masters of Science, Athletic Training

Context: Lower limb strength asymmetry has been linked to risk of both primary and second injuries, although the mechanism by which strength asymmetry may lend towards injury is not well understood. Strength asymmetry has been correlated to single leg hop measures. However, it is unknown whether strength asymmetry is related to other tests that mimic sport demands and the ACL injury mechanism. Objective: To determine the relationships between limb asymmetry in strength, hop tests and single-leg cutting ability. Setting: Controlled laboratory. Patients: 25 healthy female Division I soccer and basketball athletes (1.68±0.7m, 65.3±1.0kg, 19.3±1.3years) with no previous history of lower limb surgery in the past year. Interventions: All participants completed a standardized dynamic warm-up on the basketball court and were familiarized to the hop and change of direction tests. Participants then completed 3 hop tests (single leg hop, triple hop, and triple crossover hop) and the 5-0-5 agility test, consisting of a 15-meter shuttle sprint with a 180° single-leg cut. Participants performed 3 trials with each leg. Participants also completed strength testing via maximal voluntary isometric contractions (MVIC) with a handheld dynamometer (MicroFET 2; Hoggan Scientific, Salt Lake City, UT) for the knee extensors and flexors, hip extensors, abductors, internal and external rotators. Main Outcome Measures: The best trial from each performance test (farthest distance during hop tests (m) or fastest time during 505 agility (s)) and average peak torque from each muscle group were used for analysis. Limb symmetry indices (LSI) were calculated (dominant/non-dominant x 100) for each of the tests. Pearson correlations were used to evaluate the relationships between the
LSI's in strength to those during the performance tests. Results: Close limb symmetry was observed in the strength measurements (range: 96.3-104.4) and functional test performance (range: 99.9-101.8). A significant relationship was observed between the LSI's in knee flexion MVIC and crossover hop ($r=0.44$; $P=0.03$). A negative relationship was observed between the LSI's in hip external rotation MVIC and the triple hop ($r=-0.53$; $P<0.01$) and the crossover hop ($r=-0.53$; $P<0.01$). No other strength variables were related to the hopping or cutting test performance (r range: -0.13- -0.35; P=0.09-96) Conclusions: Only negligible levels of limb asymmetry were observed in this cohort during the performance and strength tests. The negative relationships observed between various strength measures and the hop tests suggest that the stronger the dominant limb was in relation to non-dominant limb, the better the non-dominant limb performed (relative to the dominant limb) on the hop tests. There was no relationship between strength asymmetries and change of direction ability. Additional work in a larger cohort with more significant asymmetries is needed to help elucidate the functional impact of the preliminary relationships we observed in the current study.

2. **Continuous Quantum Measurement by Using Recurrent Neural Network**
   Presenter: Shiva Barzili
   Advisor: Justin Dressel, PhD
   Program: PhD, Computational and Data Sciences
   Quantum mechanics allows us to predict the probabilities of experimental measurements given knowledge about the quantum state. This correspondence to probabilities forces the state to change when a measurement result becomes known. These state-collapses from measurement compete with the natural time evolution of the quantum system to produce stochastic quantum state trajectories. Accurately tracking these trajectories is an important problem for quantum computing technology. Specifically, superconducting transmon qubits are kept at temperatures near absolute zero in dilution refrigerators, so are measured through their interaction with microwave fields sent into and out of the fridge. Quadratures of these microwave fields are monitored continuously in time, producing noisy voltages that contain information about the qubits. Tracking state trajectories using these voltages requires the calibration of many parameters, such as qubit energies, resonator linewidths, decoherence timescales, and the collection efficiency. Simplifying the calibration procedure in the laboratory is a problem of considerable interest. Modern machine learning methods like deep neural networks are powerful tools to extract non-trivial correlations in big sets of data, such as the collected voltages. Because of their ability to reproduce and model nonlinear processes, they have found applications in many areas like language translation, image processing, medicine, and finance. Here we explore the use of neural networks for tracking state trajectories when dynamical parameters are not initially known. We demonstrate that a Long Short-Term Memory Recurrent Neural Network can correctly infer the state trajectories of a single qubit without any prior knowledge of quantum mechanics. The experimental data used for training includes the initial state of the qubit, the raw voltage signal obtained from continuous measurement, and the result of a randomly chosen strong final projective measurement for verification. It remains to be seen how well the technique scales to larger systems.

3. **Habit reversal training versus acceptance-enhanced behavior therapy on adults with excoriation disorder**
   Presenter: Jennifer M. Cha, BA
   Advisor: Lisa Maddox, LMFT, LPCC, Esq.
   Program: Master of Arts, Marriage and Family Therapy
   Excoriation disorder (ED) is characterized by recurrent and excessive skin picking that results in tissue damage, significant distress, and psychosocial impairment. Skin-picking is found to be a common behavior, and ED is estimated to affect 1.4% of the general US population (Jagger & Sterner, 2016). Despite its prevalence and negative impacts, ED has largely gone unnoticed in research literature. However, it has recently gained traction due to its recognition as a distinct disorder in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*. Specifically, research on effective behavioral interventions and long-term maintenance of treatment gains is lacking. The purpose of this quasi-experimental study with a between-subjects design is to compare whether habit reversal training (HRT) or acceptance-enhanced behavior therapy (AEBT) is more effective in decreasing symptom

severity and in maintaining treatment gains long-term. The study will recruit 100 participants with ED from various universities, colleges, and mental health centers within the Orange County, CA area, and allocate them to either the HRT or AEBT treatment group. Both treatments will span a total of eight weekly, one-hour sessions, which will be conducted by marriage and family therapists who are well-versed in HRT or AEBT. Skin-picking severity will be measured with the Skin Picking Scale-Revised at pretest, posttest, and at four-month intervals for a year following treatment. Treatment results will be analyzed using ANOVA

4. **Effectiveness of Personal Narrative Therapy on Social Quality of Life in Individuals Diagnosed with Schizophrenia**
   Presenter: Ross Philip Crothers, BA
   Advisor: Lisa Maddox, LMFT, LPCC
   Program: Master of Arts, Marriage and Family Therapy
   Among individuals diagnosed with schizophrenia, the severe and debilitating symptoms that are experienced often lead to a decreased quality of life. While some research has focused on improving well-being, the social aspect of quality of life is often overlooked (Birchwood et al., 1990). Without sufficient socialization, such individuals face a significant risk of isolation, social withdrawal, and constrained social functioning (Lysaker, 2007; Bae et al., 2010). While treatment as usual (TAU) has typically included cognitive behavioral therapy (CBT), researchers have suggested that narrative-enhanced CBT may serve as an effective method of treatment - although an effective model has not yet been introduced (Yanos et al., 2012). The purpose of the proposed study is to investigate the effectiveness of individual-based narrative-enhanced CBT in improving the social quality of life for individuals diagnosed with schizophrenia. The proposed study will utilize a quasi-experimental design with two treatment groups: narrative-enhanced CBT, and CBT. The study will recruit 40 individuals diagnosed with schizophrenia by collaborating with local psychiatric facilities and distributing community-based advertisements. Throughout the study, participants will engage in weekly one-hour individual sessions for a total of twelve weeks. The study will take place at the Frances Smith Center for Individual and Family Therapy located at Chapman University. Treatment will be conducted by a team of licensed mental health practitioners trained in both narrative therapy and CBT. As a measure of social quality of life, the study will utilize the Social Functioning Scale (SFS) which has shown to be a valid, reliable, and sensitive tool for assessment. Furthermore, the SFS takes into consideration individual strengths and weaknesses that ultimately affect the individual's social functioning, independence, and additional residual symptoms (Birchwood et al., 1990). The SFS will be administered on a weekly basis throughout the completion of treatment. Comparisons of SFS scores will be analyzed pre/post treatment and the collected data will be analyzed utilizing a 2x2 factorial ANOVA.

5. **Treatment of Physician Burnout Among Medical Students: A Quasi-Experimental Longitudinal Study**
   Presenter: Angela dela Cruz, BS
   Advisor: Lisa Maddox, LMFT, LPCC, MA, MS, JD

Program: Master of Arts, Marriage and Family Therapy

Physician burnout is highly prevalent within the healthcare community. It is a psychological condition that is defined by feelings of emotional exhaustion, depersonalization towards one's patients and reduced feelings of accomplishments towards one's work (Maslach, Jackson & Leiter, 1996). An individual who suffers from burnout may affect the quality of care within the workplace. Burnout also correlates with intrapersonal problems, such as physical exhaustion, increase in substance use and interpersonal issues, including martial and family problems (Maslach et al., 1996). One study has demonstrated that physician burnout is experienced not only by medical residents and practicing physicians, but also by medical students (Dyrbye et al., 2006). Despite how prevalent physician burnout is in all stages of the process of becoming a physician, there has not been an effective treatment plan that addresses this issue. The purpose of this quasi-experimental study is to investigate whether cognitive behavioral group therapy is an effective treatment for reducing physician burnout levels among medical students. 100 participants will be recruited from a Liaison Committee on Medical Education accredited medical school within the United States. Participants will be randomly assigned to either a control group or an experimental group. The control group will be given psychoeducation on physician burnout in a group setting. The treatment group will receive cognitive behavioral group therapy. Therapy will be conducted by a licensed marriage and family therapist with experience in both cognitive behavioral therapy and group therapy. The same therapist will conduct both the control group and the experimental group meetings. Both groups will meet for 1-hour per week for four months. All participants will be evaluated using the Maslach Burnout Inventory to measure levels of physician burnout at pre-treatment, post-treatment and 3-month intervals from the time of termination of therapy for one year. Data will be analyzed using ANOVA.

6. **Culturally Responsive Pedagogy in Higher Education: Inclusivity or Exclusivity**
   Presenter: Rocio Garcia
   Advisor: Kris De Pedro, PhD
   Program: PhD, Education, Leadership
   The majority of research on culturally responsive pedagogy focuses on K-12, with few studies focusing on culturally responsive pedagogy in higher education. This paper aims to add to the existing literature on culturally responsive pedagogy in higher education, by examining theories and empirical work investigating students perceptions' on culturally responsive pedagogy. This paper specifically focuses on underrepresented student populations. This paper concludes with a discussion of key implications, including the argument that college teachers who use culturally responsive pedagogy in their classrooms incite critical consciousness among marginalized students. This serves for both teachers and students to be agents of change.

7. **Consumers' Willingness to Accept Various Pharmacist-Provided Services: Findings from 2015 National Consumer Survey on Medication Experiences and Pharmacist's Role**
   Presenter: Onyeka Peter Godwin, PhD

Authors: Onyeka Peter Godwin, PhD, Mohamed Rashrash, BPharm, MPharm, Ph.D., Jon C. Schommer, Ph.D., Lawrence M. Brown, PharmD, Ph.D.
Advisor: Lawrence M. Brown, PharmD, PhD
Program: Doctor of Pharmacy

OBJECTIVES: To determine on a national scale, the willingness for consumers to accept various pharmacist-provided services including dispensing medications, information about medication, medication management, and health improvement. Data analysis was based on state, region, and other demographic variables such as gender, age, and education level attained.

METHODOLOGY: The data used in this study were collected via an online survey, a National Consumer Survey on Medication Experience and Pharmacist's Role that was administered between April and June 2015 investigating consumer's views and expectations of pharmacy services in the US.A sample of 26,173 adults representing the entire US in 2015 with at least 500 survey responses from each state were received. The survey participants were asked to specify their willingness to accept 26 different services based on a four-point Likert scale. Willingness to accept included those patients who say "Might be willing to accept" or "Definitely would be willing to accept."

RESULTS: The participants in this survey were 94% or higher more willing to accept pharmacist-provided services related to dispensing medication and information about medication compared to medication management and health information (79-89%). The Pacific and the New England states were less likely to accept services related to medication management and health information (81-86%). The West North Central states were more likely to accept services related to dispensing medication and information about medication. The X'ers (those born between 1965 and 1981) were more likely to accept all the services provided by the pharmacists compared to other age categories and the Veterans (those born before 1945) were least likely to accept these services. Females were about 3% more willing to accept dispensing, information, and medication management services compared to their males counterparts. The higher the household income, the higher the acceptance level of the services provided by the pharmacists, 80 – 92% for those earning $20,000.00 or less and 82% - 97% for household income of $21,000.00 and higher (P value <0.05).

CONCLUSION: The study showed that the most accepted services were dispensing and information services. States like Delaware, Minnesota, Idaho, and Wisconsin had the highest willingness to accept all services while others such as Alaska, DC, Colorado, and California were the lowest. However, all states were above 90%.

8. **"Reimagining the World to Include People like Me": Reframing the Canon through Young Adult Literature about Women**

Presenter: Danika C.J. Hazen, BA
Advisor: Joanna Levin, PhD
Program: Master of Arts, English and Master of Fine Arts, Creative Writing

Since its inception the idea of the literary canon has been fraught with issues, inherently reflecting the values of its creators; these creators have historically been straight men. Slowly but surely the canon has been opening up to more diverse authors and stories, but it remains that the majority of the texts considered important to read in classrooms across the country reflect heterosexuality and male stories. In my research I examine how female authors have

taken canon stories and rewritten them to reflect female and queer perspectives within the space of the young adult novel. Through Lisa Klein's Ophelia, Sara Benincasa's Great, and Malinda Lo's Ash I examine how women can use the space of the young adult genre to take texts like Hamlet, The Great Gatsby, and the Cinderella tale; that do not reflect a diverse femininity or feminine sexual experience; and retell them in a light that reflects their lives as diverse, sexual women.

9. **Perfectionism and anxiety among Filipino/Filipino-American adult, female students attending Chapman University**
   Presenter: Maxine M. de Luna, BA
   Advisor: Lisa Maddox, LMFT, LPCC, Esq.
   Program: Master of Arts, Marriage and Family Therapy
   The Asian-American population in the United States is large and rapidly increasing. In one study, significantly greater reports of perfectionism were found among Asian Americans (Chang, 2013). In another study, greater anxiety and risk of anxiety were found among Filipino/Filipino-American older adolescent females (Okamura et al., 2016). However, there has been no research that studies the relationship between perfectionism and anxiety in specific Asian-American populations, such as Filipino/Filipino-American female adults. The purpose of this quantitative research study is to investigate the relationship between perfectionism and anxiety among Filipino/Filipino-American adult females. Perfectionism will be measured by participants' scores on the Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990). The FMPS measures the strengths to which participants agree or disagree with their experiences on six dimensions of perfectionism. Anxiety will be measured by participants' scores on the Beck Anxiety Inventory (BAI; Beck et al., 1988). The BAI measures the severities of participants' experiences of common anxiety symptoms. Convenience and now ball sampling will be used to recruit 100 Filipino/Filipino-American adult, female students attending Chapman University. The researcher will email presidents of two Chapman University (CU) student organizations and ask them to share a recruitment flyer and link with eligible participants. Eligible participants will also be asked to share the recruitment flyer and link with other eligible participants. To be eligible, participants will need to identify as being Filipino/Filipino-American, female, at least 18-years-old, and a student attending CU. Participants will complete the FMPS and BAI online. Finally, the relationship between participants' FMPS and BAI scores will be analyzed using a Pearson's *r* correlation.

10. **Irradiation as an Alternative to Methyl Bromide Fumigation and DPA treatment of 'Granny Smith' Apples**
    Presenter: Paul N. Olabode
    Co-Authors: Beatrice C. Michael; Anderson Melo, PhD; Anuradha Prakash, PhD.
    Advisor: Anuradha Prakash, PhD
    Program: Master of Science, Food Science
    Irradiation at 250 Gy is approved as a phytosanitary treatment for apples destined for Mexico to serve as an alternative to methyl bromide (MeBr) fumigation which is an ozone deplete.

MeBr also increases the incidence of surface scald in 'Granny Smith' apples. To prevent surface scald, 'Granny Smith' apples are dipped in diphenylamine (DPA), a compound considered to be a carcinogen and prohibited in Europe. The objective of this study is to evaluate the effect of irradiation on 'Granny Smith' apples and determine if it can preclude the use of both, DPA and MeBr. Freshly harvested 'Granny Smith' apples were irradiated at 310 Gy or 1000 Gy or fumigated with MeBr at 48 mg/m^3. Treated and control fruits were stored at 0.5 ± 0.5 °C, 92 ± 3 % relative humidity for up to 6 months. Following cold storage, fruits were kept at one week at ambient temperature prior to analysis. Ethylene levels in the irradiated apples decreased significantly ($p<0.05$) upon treatment and remained lower throughout storage compared to control and fumigated. Similarly, the incidence of surface scald was significantly lower in irradiated fruit as compared to fumigated and control apples at all storage times. Conjugated dienes and α-farnesene concentrations decreased significantly ($p<0.05$) during storage in irradiated apples, consistent with the lowered ethylene and surface scald. However,43% of apples irradiated at 1000 Gy showed internal browning after 90 days, and 56% after 6 months + 7 days during ambient temperature storage. The low internal browning and superficial scald compared to control in the apples treated at 310 Gy, suggests that 250 Gy would serve as a good alternative to MeBr for phytosanitary purposes and as an alternative to DPA treatment.

11. Topological Barriers for Charged Quantum Systems

Presenter: Ismael L. Paiva**,** MS
Co-Authors: Yakir Aharonov, PhD; Jeff Tollaksen, PhD; Mordecai Waegell, PhD
Advisors: Yakir Aharonov, PhD; Jeff Tollaksen, PhD
Program: PhD, Computational and Data Sciences

The Aharonov-Bohm effect is an example of how the topology can affect the dynamics of quantum systems. A charged quantum "particle" is affected by the presence of an infinite solenoid while traveling around it, even though the solenoid does not generate electromagnetic field outside its interior. In this study, we discuss how topological effects induce energetic barriers that affect charged quantum systems only. Quantum systems without charge or any classical particle would not be influenced by it. Moreover, we present a thought experiment where we consider two solenoids inside a quantum cavity and argue that the energetic barriers introduced by the solenoids make possible the existence of systems that stay confined in the region between them. Preliminary computational results are presented.

12. Estimation of the relationship between satellite-derived vegetation indices and live fuel moisture towards wildfire risk ins Southern California

Presenter: Kristen L. Whitney, MS
Co-Authors: Seung Hee Kim, PhD; Shenyue Jia, PhD
Advisor: Menas Kafatos, PhD
Program: PhD, Computational and Data Sciences

Southern California possesses a Mediterranean climate having semi-arid to arid

characteristics and contains shrublands at high risk to wildfire. To assess wildfire danger, fire agencies have been monitoring the moisture of vegetation, called live fuel moisture (LFM), using field-based sampling. Unfortunately, spatial and temporal resolution of LFM data are significantly limited because LFM sampling is labor intensive. Remote sensing satellite data has been used to monitor vegetation moisture content and health of shrublands. Therefore, a potential approach to overcome the limitations of manual measurements of LFM is to use vegetation indices (VIs) derived from satellite data. The objective of this study is to understand the link between VIs derived from a Moderate Resolution Imaging Spectroradiometer (MODIS) aboard both Terra and Aqua satellites and in-situ LFM data. In this study, five VIs (e.g. NDVI, EVI, NDII, NDWI, VARI) were calculated using 6 bands of MODIS data within the visible and infrared spectrum collectively. Fourteen sites with multi-year LFM data collection were each represented with one pixel of MODIS data with a 500m by 500m spatial resolution covering the time period of February 2000 through December 2017. Simple linear regression was then applied to measure the coefficient of determination (R^2) between the VIs and linearly interpolated LFM data. The results show a great variance of R^2 between the sites. The strongest R^2=0.741 was calculated at one site for EVI vs. LFM over a15-year time period of data collected on Aqua. Sites with more consistent biweekly LFM data acquisition tend to have a higher correlation with all five VIs. Our preliminary results indicate that the satellite data reasonably well-represents the LFM with higher temporal resolutions over a large area. Utilizing the remote sensing data in wildfire danger assessment will be beneficial for fire agencies, land management and planning, stakeholders and local governments.

13. Can people learn to be random?

Presenter: Alice Wong, BA
Co-Author: Garance Merholz, BA
Advisor: Uri Maoz, PhD
Program: PhD, Computational and Data Sciences

Human endogenous random-number generation (RNG) has been shown to be systematically biased—underrepresenting long repetitions of short patterns (e.g., 0-0-0-0 is underrepresented in binary random-series)—but becomes more random in some situations. In our experiment, we first measured whether subjects' RNG ability transferred from a competitive environment with feedback (CF) to an endogenous, self-directed one (SD), devoid of feedback or competition.

Subjects carried out an experiment composed of 3 parts: (1) Pre-SD: RNG of Rock (R), Paper (P), Scissors (S); (2) CF: game of R-P-S against a computer; (3) Post-SD: same as pre-SD. The CF part varied among 3 between-subject conditions. In conditions 1 and 2, the computer searched for patterns in each subject's choice history and used those to beat the subject. So, subjects' choices needed to be as random as possible to win. In condition 3, the computer generally followed a simple, repetitive pattern. In conditions 1 and 3, subjects were only instructed to play against the computer, while in condition 2 they were specifically informed that they had to be as random as possible to win. Subjects were considerably more random in CF trials than pre- and post-SD ones, reaching levels comparable to a pseudorandom-number generation. For CF trials, conditions 1 and 2 were similarly random and more random than condition 3. But subjects under conditions 1 and 2 were unable to

transfer their superior RNG abilities from CF to SD trials. Our results suggest that the differences between the conditions were driven mainly by the systematic underrepresentation of long repetitions of short patterns.

14. The Female Novelist's Anxiety of Authorship

Presenter: Peggy Sue Wood, BA, BFA
Advisor: Joanna Levin, PhD
Program: Master of Arts, English Literature

The "anxiety of authorship" is a term defined through the female author's experience and contextual location in both time and place. The term was introduced by Sandra Gilbert and Susan Gubar in their book, *The Madwoman in the Attic*, where they discussed the struggles of authorship that women of the nineteenth-century in Western cultures faced regarding both the internal struggle of influence that all writer have—which was defined by Bloom with a male focus—and the external struggle against patriarchal forces. Regarding this particular term, Gilbert and Gubar examined the short story, "The Yellow Wallpaper" by Charlotte Perkins Gilma (or Charlotte Perkins Stetson), which to them depicted, in fictional terms, the extent of the patriarchal forces at hand and their psychological effect on the female authorship. The anxiety of authorship is "not a recommendation *for* [the female writer] but an analysis of one," meaning that no solutions can be drawn from the texts because they are not answers, rather, they are experiences (Gilbert and Gubar 1928). While many authors and critics may now feel that the "anxiety of authorship" no longer applies to contemporary works of literature, there is an argument that the ever-growing population of female authors in Eastern cultures still suffers the same forces once faced in what Western culture believes to be literary "history." By examining the feminist theory of the "anxiety of authorship" in relation to Maki Kashimida's short story "The Female Novelist" and Charlotte Gilma's "The Yellow Wallpaper," this paper shows how "The Female Novelist" appears to depict the theory in modern terms, from a Japanese perspective.

15. Optimization of DNA-based methods to identify elasmobranch species in shark cartilage pills

Presenter: Rowena J. Zahn
Co-Authors: Anthony J. Silva; Rosalee S. Hellberg, PhD
Advisor: Rosalee S. Hellberg, PhD
Program: Masters of Science, Food Science

Shark cartilage is used in dietary supplements due to its potential nutraceutical benefits, including enhanced wound repair and anti-inflammatory effects. With growing concern over exploitation of global elasmobranch populations, research is needed to improve methods for species identification in shark cartilage pills. The objective of this study was to optimize DNA extraction and amplification techniques to identify species in shark cartilage pills using DNA mini-barcoding. A total of 22 shark cartilage products underwent DNA extraction in duplicate using the DNeasy Blood and Tissue Kit (Qiagen). The impact of a clean-up step following DNA extraction was analyzed by comparing DNA purity values and polymerase chain reaction (PCR) amplification success rates among samples. Next, five different primer

sets were compared based on amplification success with the 22 shark cartilage products tested in duplicate and the three most successful primer sets were used to perform DNA sequencing. The results of DNA extraction showed a slight advantage in using the additional clean-up step, with a higher success rate (52.2% vs. 47.8%) and A260/230 value (3.3 vs. 0.6) as compared to DNA extraction alone. When the results for all three primer sets were combined, 18 of the 22 shark cartilage products could be identified to the species or genus level for an overall success rate of 81.8%. Overall, the optimized methodology developed in this study increased the success rate for identification of elasmobranches in cartilage products from 36.3% in a previous study to 81.8% in the current study. These optimized DNA-based techniques can contribute to the enforcement of labeling regulations and anti-trafficking laws by enabling the identification of mislabeled and/or vulnerable species in shark cartilage pills.

16. Prism Study: Pharmacists Image on Social Media

Presenter: Alexa Christine Zeiger
Co-Authors: John Andraos; Alex Delgado; Gerald Gamboa; Priya Patel; Lila Rouzitalab; Roger Ty; Alyia Williams; Alexa Zeiger
Advisors: Lawrence M. Brown, PharmD, PhD; Jeffrey Goad, Pharm.D, MPH, FAPhA, FISTM, FCPhA, FCSHP; Jelena Lewis, Pharm.D
Program: Doctor of Pharmacy

Social media has become a heavily-used platform for exchanging health information. One aspect of social media that needs improvement is the depiction of the role of pharmacists and their importance in the healthcare system. The contemporary pharmacist in the United States plays an integral and dynamic role in providing patient care in regards to quality and safety. This role has evolved over the recent years from merely counting and dispensing medications to providing a variety of services to the community, including administering immunizations and furnishing hormonal contraceptives. The public perception of pharmacist roles has not changed much over the years despite an expansion of services a pharmacist can provide. The primary objective of this study was to identify the image of pharmacists in social media. The secondary objective of this study was to determine effective strategies to change pharmacists' image in the social media. In this study, two hundred Twitter posts from April and October 2016 containing the search word "Pharmacist" were analyzed by post type, emotional tone, and source. Although pharmacists play an integral role in the health of patients, this is not properly reflected in social media as a majority of the Twitter posts were neutral. This shows that there is room for improvement among pharmacists and pharmacy organizations to advocate for themselves and make sure that patients begin to see pharmacists in a more positive light. This study showed that the number of posts from pharmacy organizations does not correlate with a more positive outlook which means that organizations need to focus more on the quality of their post and not the quantity. With a more targeted media outreach approach, pharmacy organizations and pharmacists alike can develop better means for earning and keeping patients' trust.

3MT Abstracts

1. **From Darkness to Light**
   Presenter: Gregory Barraza**,** MS, MFA
   Advisor: Anaida Colon-Muniz, EdD
   Program: PhD, Education, Cultural and Curricular Studies
   My life and experiences undergirded my philosophy; it was how I experienced organized racism by police and educators that fueled my desire to focus on the individuals who may not have had the same realization. I feel that I need to expose my students to the truth and the subconscious actions committed upon them by authoritative figures; more importantly, I feel I need to show my students how to nonviolently overcome the racist behaviors, how to rise above actions against their humanity. The most effective way is through education. We, as people of color, need to know that we are talented and intelligent by becoming educated people who understand that. The last thing those in power want are suppressed peoples to have organized thoughts and higher ordered thinking; those in power want to continue the historical trauma and continue to embed inferiority into our psyches. European, Anglican society collectively and historically continues the trauma, for empowering Indigenous survivors as a group and as individuals reduces the stigma and isolation created by reinforcing the minority versus majority culture (Yellow Horse Brave Heart, Chase, Elkins, & Altschul, 2011). The best way to insure this vision is to insure the pedagogy seriously attempts to understand our culture and bring forward accurate accounts in textbooks (Sanchez, 2007) by developing an intervention beginning and driven by the community, and educators, shrinking the emotional suffering and dissolving the long term trauma of historical acts and perceptions (Yellow Horse Brave Heart et al., 2011).
   As a researcher and critical pedagogue, and more importantly, as one who knows the experiences of my participants, I feel the need to represent the students who need representation the most.

2. **Continuous Quantum Measurement by Using Recurrent Neural Network**
   Presenter: Shiva Barzili
   Advisor: Justin Dressel, PhD
   Program: PhD, Computational and Data Sciences
   Quantum mechanics allows us to predict the probabilities of experimental measurements given knowledge about the quantum state. This correspondence to probabilities forces the state to change when a measurement result becomes known. These state-collapses from measurement compete with the natural time evolution of the quantum system to produce stochastic quantum state trajectories. Accurately tracking these trajectories is an important problem for quantum computing technology. Specifically, superconducting transmon qubits are kept at temperatures near absolute zero in dilution refrigerators, so are measured through their interaction with microwave fields sent into and out of the fridge. Quadratures of these microwave fields are monitored continuously in time, producing noisy voltages that contain information about the qubits. Tracking state trajectories using these voltages requires the calibration of many parameters, such as qubit energies, resonator linewidths, decoherence

timescales, and the collection efficiency. Simplifying the calibration procedure in the laboratory is a problem of considerable interest. Modern machine learning methods like deep neural networks are powerful tools to extract non-trivial correlations in big sets of data, such as the collected voltages. Because of their ability to reproduce and model nonlinear processes, they have found applications in many areas like language translation, image processing, medicine, and finance. Here we explore the use of neural networks for tracking state trajectories when dynamical parameters are not initially known. We demonstrate that a Long Short-Term Memory Recurrent Neural Network can correctly infer the state trajectories of a single qubit without any prior knowledge of quantum mechanics. The experimental data used for training includes the initial state of the qubit, the raw voltage signal obtained from continuous measurement, and the result of a randomly chosen strong final projective measurement for verification. It remains to be seen how well the technique scales to larger systems.

3. **A grounded theory study on: fathers of children/young adults on the autism spectrum**
   Presenter: Lisa A. Boskovich, MA
   Advisor: Dawn Hunter, PhD
   Program: PhD, Education
   The relationship between a father and their child/young adult along the Autism Spectrum (AS) frequently is a life changing and powerful experience. While Frye (2016) and Hannon and Hannon (2017) have provided some research on fathers' experiences raising a child on the AS, there is a paucity of literature in this area of study. Therefore, the purpose of this grounded theory research study was to expand the current literature base by exploring the role(s) and relationship(s) fathers have with their child/young adult on the AS. Using convenience sampling methodology (Charmaz, 2014), three fathers participated in a one hour semi-structured interview in which a series of questions were asked (e.g., What were your experiences being a father to a child/young adult on the AS? Has your relationship with your child changed over time? If so, were there specific events that triggered this change?). Themes that emerged in the study from these interviews included (a) the reconciliation of preconceived ideas and beliefs of parenthood before the birth of a child and after the birth of a child who subsequently was diagnosed with AS, (b) the inner journey experienced as a result of a child's AS diagnosis, and (c) the impact the child had on the personal life and relationship with the father's spouse. These finding are important for fathers, families, and professionals working with fathers who have a child on the AS. The study concluded with suggested areas for future exploration in this new area of research.

4. **The Impact of Listening to Content-specific Background Music on Testing Performance in Middle School Students**
   Presenter: Juan P. Delgado, B.A.
   Advisor: Anat Herzog, PhD
   Program: Master of Arts, Teaching
   The Brain-Priming Effect of Content-Specific Background Music

While there is extensive amount of research on the effectiveness of music as a learning aid when studying, there is a very little research on the effectiveness of music as an aid for improving testing performance. Therefore, the purpose of this study is to examine the impact of listening to content-specific background music on testing performance in middle school World History students. Specifically, this study focuses on the brain-priming effect of content-specific background music. Music relevant to the unit of study was played during the administration of tests in a middle school World History classroom. Test results were compared to results of previous tests for each student. Also, a survey was created containing questions regarding students' study habits, music preferences, and likeness for the content-specific background music played during tests. A total of 65 students from McFadden Intermediate School in Santa Ana, California were surveyed. Preliminary results of this study indicate that the direction and strength of relationship between testing performance and content-specific background music depends on the music's likeness to each particular student.

5. **Culturally Responsive Pedagogy in Higher Education: Inclusivity or Exclusivity**
   Presenter: Rocio Garcia
   Advisor: Kris De Pedro, PhD
   Program: PhD, Education, Leadership
   The majority of research on culturally responsive pedagogy focuses on K-12, with few studies focusing on culturally responsive pedagogy in higher education. This paper aims to add to the existing literature on culturally responsive pedagogy in higher education, by examining theories and empirical work investigating students perceptions' on culturally responsive pedagogy. This paper specifically focuses on underrepresented student populations. This paper concludes with a discussion of key implications, including the argument that college teachers who use culturally responsive pedagogy in their classrooms incite critical consciousness among marginalized students. This serves for both teachers and students to be agents of change.

6. **"We Heard Tell": Rumors as News in Civil War Letter Writing**
   Presenter: Erika S. Gibson, BA
   Advisor: Jennifer Keene, PhD
   Program: Master of Arts, War and Society
   Utilizing untapped archival material from the Center for American War Letters, my project examines how rumors were a vital part of news sharing during the Civil War. While sweeping historical narratives of the Civil War have long been established, the individual soldier's stories provide important insight into the culture and society of the time period. Private Joseph Coryell of the 24th Michigan Infantry wrote prodigiously to his wife while serving with the Iron Brigade in Maryland and Virginia. Though his letters span only a year a half, rumors and news become a predominant theme among the dozens of pages of written material shared between his wife and his family. The almost constant request for news from both parties and the sharing of rumors in place of hard facts suggest that rumors, in and of themselves, were meaningful forms of information for the families of soldiers.

7. **"Reimagining the World to Include People like Me": Reframing the Canon through Young Adult Literature about Women**
   Presenter: Danika C.J. Hazen, BA
   Advisor: Joanna Levin, PhD
   Program: Master of Arts, English and Master of Fine Arts, Creative Writing
   Since its inception the idea of the literary canon has been fraught with issues, inherently reflecting the values of its creators; these creators have historically been straight men. Slowly but surely the canon has been opening up to more diverse authors and stories, but it remains that the majority of the texts considered important to read in classrooms across the country reflect heterosexuality and male stories. In my research I examine how female authors have taken canon stories and rewritten them to reflect female and queer perspectives within the space of the young adult novel. Through Lisa Klein's Ophelia, Sara Benincasa's Great, and Malinda Lo's Ash I examine how women can use the space of the young adult genre to take texts like Hamlet, The Great Gatsby, and the Cinderella tale; that do not reflect a diverse femininity or feminine sexual experience; and retell them in a light that reflects their lives as diverse, sexual women.

8. **The Gypsy Holocaust (1939-1945): Why Its Lessons Retain Meaning & Purpose Today**
   Presenter: Ross W. Johnson, JD, MA, MSM, MBA
   Advisor: Jennifer Keene, PhD
   Program: Master of Arts, War and Society
   Historians estimate that the Axis powers murdered over 25 percent of the Gypsy (Romani) population of Europe (about one million people) during the Holocaust from 1939 to 1945. This is an unknown fact to many people today for many reasons. Most Gypsies wandered around Europe without a national identity because their ethnicity and culture were not considered to be European or Christian. This historical tragedy is important to study because of humankind's inclination to mistreat people labeled as outsiders, foreign, undesirable, impure, criminal or just not one of us. Today, millions of Europeans share similar attitudes towards recent Syrian and North African refuges, while millions of Americans falsely label Mexican immigrants as rapists and murderers. My study will address what the Gypsy tragedy can teach us about ourselves, and how our society today can learn to be more tolerant and accepting of those who are different?

9. **Modular Variables and Nonlocality in Quantum Mechanics**
   Presenter: Ismael L. Paiva, MS
   Co-Authors: Yakir Aharonov, PhD; Jeff Tollaksen, PhD; Mordecai Waegell, PhD
   Advisors: Yakir Aharonov, PhD; Jeff Tollaksen, PhD
   Program: PhD, Computational and Data Sciences
   The Aharonov-Bohm effect is an example of how the topology can affect the dynamics of quantum systems. A charged quantum "particle" is affected by the presence of an infinite solenoid while traveling around it, even though the solenoid does not generate electromagnetic field outside its interior. In this study, we discuss how topological effects

induce energetic barriers that affect charged quantum systems only. Quantum systems without charge or any classical particle would not be influenced by it. Moreover, we present a thought experiment where we consider two solenoids inside a quantum cavity and argue that the energetic barriers introduced by the solenoids make possible the existence of systems that stay confined in the region between them. Preliminary computational results are presented.

10. Script: My Boyfriend

Presenter: Vera T. Pickens
Advisor: Paul Wolansky
Program: Master of Fine Arts, Screenwriting
Screenplay

11. Generation in Debt

Presenter: Christopher D. Rooney, BS
Advisor: Anat Herzog, PhD
Program: Masters of Arts, Teaching
Financial Literacy is globally recognized as an essential life skill.[1] And yet, young people in the United States lack even basic proficiency in personal finance. They are better educated than their predecessors, more ethnically diverse, and more economically active.[2] They are confronted with greater economic uncertainty than any generation before them[2] and yet, we, as a society, have failed to prepare them with this necessary life skill. Only 24% of millennials demonstrate basic financial knowledge[2]; and yet more shocking than this pitiful figure, is how we've come to accept this failing in our society. In a personal meeting I held with six high school guidance counselors, when sharing this statistic, they responded: "I'm surprised it's that high." We know the failings of our society and our schools, but have allowed it to continue, despite the societal advantages. We have seen firsthand that improving the financial health of individuals has powerful ripple effects across families, communities, and entire economies;[2] and that process starts in the classroom. Only, California schools are part of the problem. Ours is one of only five states in our nation that fails to provide personal finance curriculum to their students.[3] But that stops here, at Chapman University. In collaboration with the College of Educational Studies, Tustin Unified School District, six high school guidance counsellors, and 35 experienced educators, we have successfully deployed new and innovative curriculum to over 1,000 students; where an overwhelming 95% of participants have validated its' merit;[3] 64% who can't get this education anywhere else.[3] But we're just getting warmed up. Armed with new findings from these same students, we will continue to develop additive curriculum that targets those financial skills most desperate to young people today, undue the failings of our educational system, and give future generations a chance at financial solvency.

12. Applying the Health Belief Model to diet change

Presenter: Tessa R. Urbanovich, MS

Co-Author: Jennifer L. Bevan, PhD
Advisor: Jennifer L. Bevan, PhD
Program: Master of Science, Health and Strategic Communication
Adoption of a plant-based diet (PBD) has been shown to reduce one's risk of cancer, heart disease, and Type 2 diabetes, rendering it a useful preventative health behavior in light of the United States' current chronic disease burden. Because there are such low numbers of people following a PBD, this online survey study sampled 514 participants across the United States, utilizing the Health Belief Model and the Theory of Planned behavior in order to better understand motivation and intention to adopt a PBD. Results indicated that both self-efficacy and subjective norms are significant and positive predictors of intention to eat a PBD. Moreover, the highest perceived benefit of adopting a PBD is that of health and well-being, while the highest perceived barrier is the difficulty associated with breaking current eating habits. Future research on the topic should continue to explore various measurements and further influence on intention of HBM variables, including cues to action and the perceived threat of chronic disease. Health professionals promoting PBDs within the U.S. population should address the barriers of habit-breaking, as well as continue to develop self-efficacy and increase visibility of the health and ethical benefits of this diet.

13. **Caught in the Crossfire: How elementary-aged Latino students respond to the school-to-prison pipeline**
Presenter: Victor Vega
Advisor: Scot Danforth, PhD
Program: PhD, Education
The link between schooling and the over-representation of minority and immigrant populations in the United States penal system is referred to as the school ot prison pipeline. The pipeline model describes how punitive disciplinary polices, such as zero tolerance, disproportionately affect Black and Latino students in the P-20 education system. Critical scholars situate the school to prison pipeline within the broader struggle against neoliberalism and the incarceration state. Little is known, however, about elementary-aged student's responses to pipeline dynamics locally, at the intersection of schools, law enforcement and youth organizations. This study sheds light on elementary-aged Latino student's responses to pipeline dynamics at the intersection schools, law enforcement, and youth organizations.

14. **Estimation of the relationship between satellite-derived vegetation indices and live fuel moisture towards wildfire risk ins southern California**
Presenter: Kristen L. Whitney**,** MS
Co-Authors: Seung Hee Kim, PhD; Shenyue Jia, PhD
Advisor: Menas Kafatos, PhD
Program: PhD, Computational Data Sciences
Southern California possesses a Mediterranean climate having semi-arid to arid characteristics and contains shrublands at high risk to wildfire. To assess wildfire danger, fire

agencies have been monitoring the moisture of vegetation, called live fuel moisture (LFM), using field-based sampling. Unfortunately, spatial and temporal resolution of LFM data are significantly limited because LFM sampling is labor intensive. Remote sensing satellite data has been used to monitor vegetation moisture content and health of shrublands. Therefore, a potential approach to overcome the limitations of manual measurements of LFM is to use vegetation indices (VIs) derived from satellite data. The objective of this study is to understand the link between VIs derived from a Moderate Resolution Imaging Spectroradiometer (MODIS) aboard both Terra and Aqua satellites and in-situ LFM data. In this study, five VIs (e.g. NDVI, EVI, NDII, NDWI, VARI) were calculated using 6 bands of MODIS data within the visible and infrared spectrum collectively. Fourteen sites with multi-year LFM data collection were each represented with one pixel of MODIS data with a 500m by 500m spatial resolution covering the time period of February 2000 through December 2017. Simple linear regression was then applied to measure the coefficient of determination (R^2) between the VIs and linearly interpolated LFM data. The results show a great variance of R^2 between the sites. The strongest R^2=0.741 was calculated at one site for EVI vs. LFM over a15-year time period of data collected on Aqua. Sites with more consistent biweekly LFM data acquisition tend to have a higher correlation with all five VIs. Our preliminary results indicate that the satellite data reasonably well-represents the LFM with higher temporal resolutions over a large area. Utilizing the remote sensing data in wildfire danger assessment will be beneficial for fire agencies, land management and planning, stakeholders and local governments.

15. Optimization of DNA-based methods to identify elasmobranch species in shark cartilage pills

Presenter: Rowena J. Zahn
Co-Authors: Anthony J. Silva; Rosalee S. Hellberg, PhD
Advisor: Rosalee S. Hellberg, PhD
Program: Master of Science, Food Science

Shark cartilage is used in dietary supplements due to its potential nutraceutical benefits, including enhanced wound repair and anti-inflammatory effects. With growing concern over exploitation of global elasmobranch populations, research is needed to improve methods for species identification in shark cartilage pills. The objective of this study was to optimize DNA extraction and amplification techniques to identify species in shark cartilage pills using DNA mini-barcoding. A total of 22 shark cartilage products underwent DNA extraction in duplicate using the DNeasy Blood and Tissue Kit (Qiagen). The impact of a clean-up step following DNA extraction was analyzed by comparing DNA purity values and polymerase chain reaction (PCR) amplification success rates among samples. Next, five different primer sets were compared based on amplification success with the 22 shark cartilage products tested in duplicate and the three most successful primer sets were used to perform DNA sequencing. The results of DNA extraction showed a slight advantage in using the additional clean-up step, with a higher success rate (52.2% vs. 47.8%) and A260/230 value (3.3 vs. 0.6) as compared to DNA extraction alone. When the results for all three primer sets were combined, 18 of the 22 shark cartilage products could be identified to the species or genus level for an overall success rate of 81.8%. Overall, the optimized methodology developed in this study increased the success rate for identification of elasmobranches in cartilage products

from 36.3% in a previous study to 81.8% in the current study. These optimized DNA-based techniques can contribute to the enforcement of labeling regulations and anti-trafficking laws by enabling the identification of mislabeled and/or vulnerable species in shark cartilage pills.